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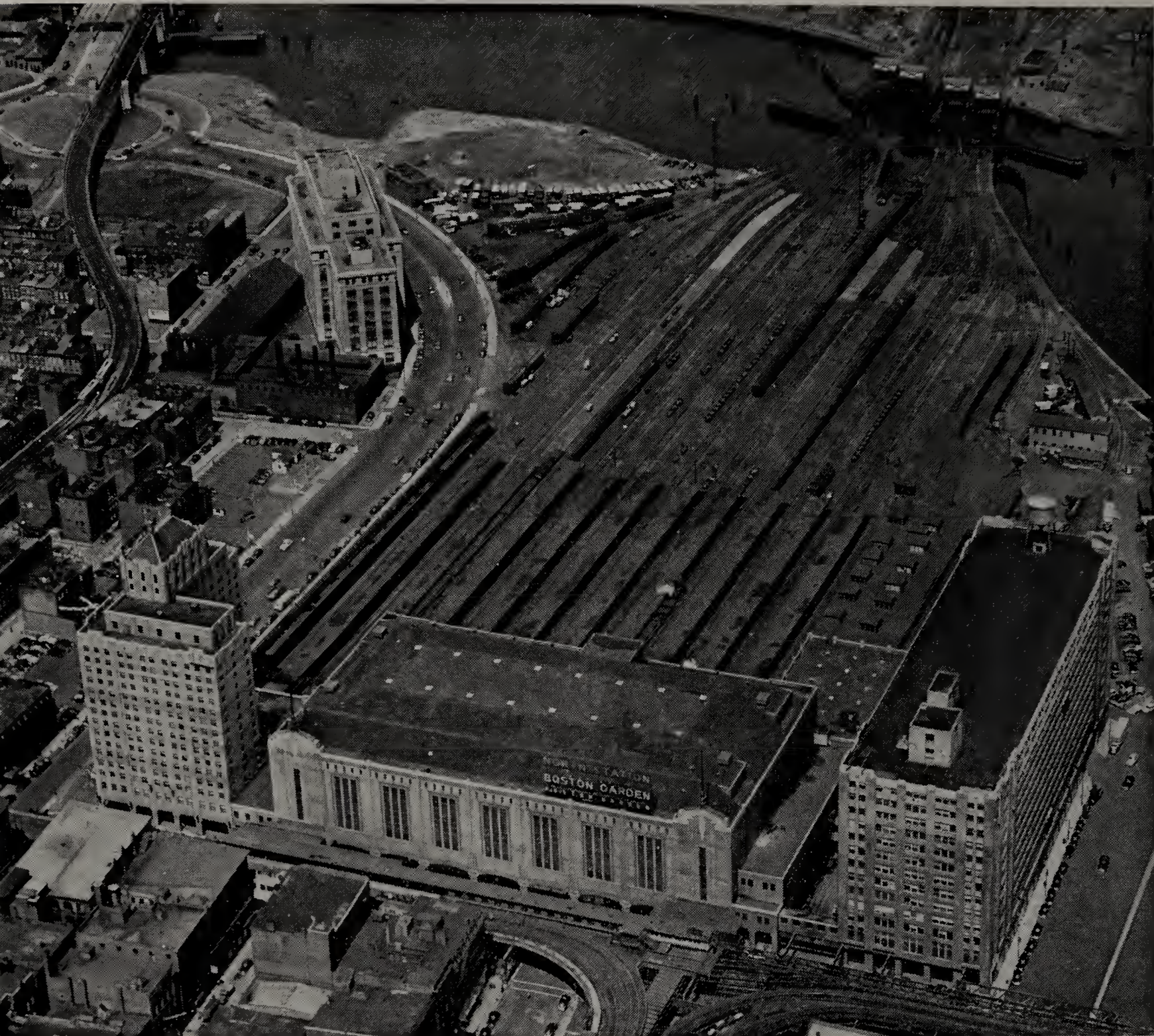
RAILROADING

on the **BOSTON AND MAINE**

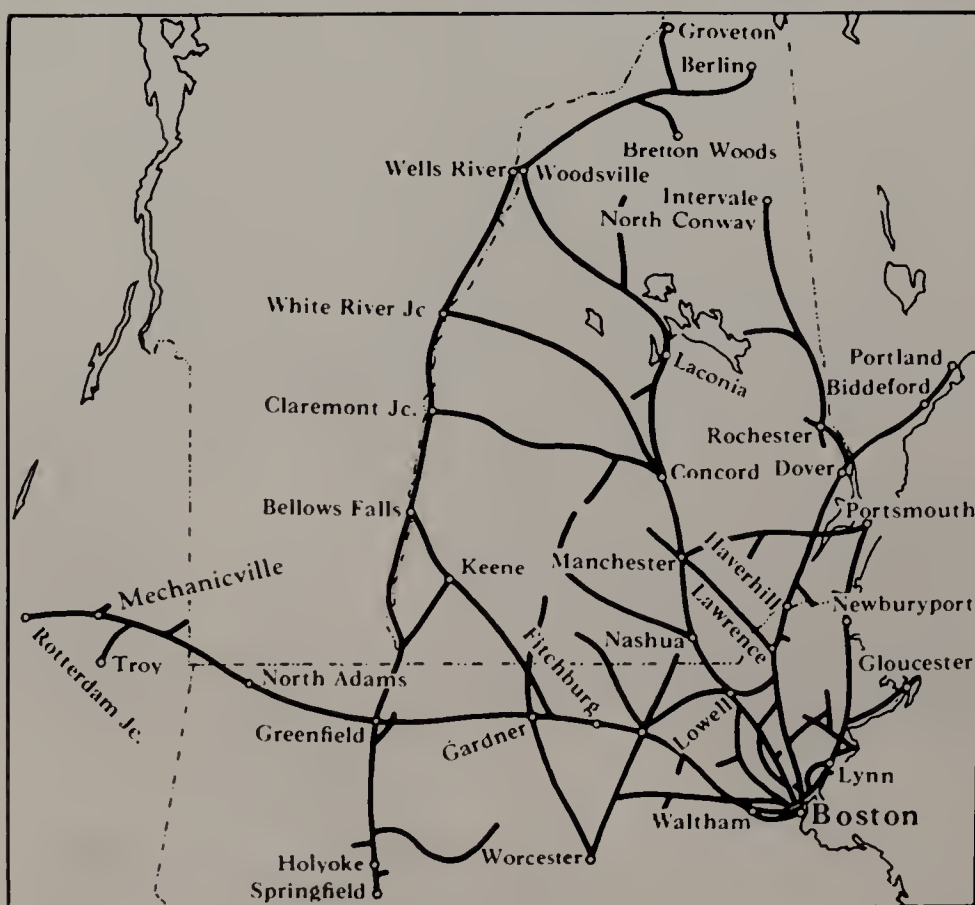


RAILROAD

"MINUTE MAN SERVICE"



Air view of North Station, Boston. In foreground, left to right, Hotel Manger; North Station, with Boston Garden above concourse; North Station Industrial Building housing offices of the Road.



RAIL LINES OF THE BOSTON AND MAINE RAILROAD

INTRODUCTION

“Railroading must be a fascinating business!”

Yes — to answer this familiar remark — railroading *is* a fascinating business. The Executive, Operating, Engineering, Accounting, Traffic, Finance, Purchases and Stores, and Legal Departments, all play an important part in this interesting business of running a railroad.

Just as a carpenter needs different kinds of tools to do his job right, the Boston and Maine needs different kinds of equipment in order to provide transportation for passengers and for all types of freight — from coal to cattle, from tobacco to tanks.

The following pages illustrate some of the tools we use in the normal operation of our business. The descriptions are non-technical, and not every device and piece of special equipment is shown. But it's fairly representative.



One of the B and M's fast, stainless steel Highliners.



Interior of Diesel-Electric Passenger Locomotive

Power is the heart and life of a railroad. And here in Northern New England, modern power is essential, because some of the territory served by the Boston and Maine is rugged and mountainous — and all of it is subject to heavy snowfall.

In general, a railroad needs three types of motive power; passenger, freight and switching. Then again, passenger power is divided into two general types — heavy for long-haul main line trains and lighter power for local trains. Freight, similarly, needs heavy power for long through trains and lighter power for the smaller locals and yard switching.

All our through freight and passenger trains are handled by diesels, with a maximum speed in passenger service of 70 miles per hour and in freight service of 45 miles per hour.



4200-4223
Main Line Freight
233 Tons 96'6" long
2700 Horse Power (2 Units)
65 M.P.H. Maximum Speed

4224-4228
Main Line Freight and
Passenger
244 Tons 100'9" long
3000 Horse Power (2 Units)
65 M.P.H. Maximum Speed

Boston and Maine Four Unit Freight Diesel having a total of 5400 horse power.
This unit is used for heavy and long distance freight.

Until recent years steam was the mightiest and most practical kind of railroad motive power — but on most American railroads today steam is on the wane. The largest single item in the expenditures of American railroads on plant and equipment since World War II has been in the rapid conversion from coal-burning steam locomotives to oil-burning diesel-electrics.

This has come about because a half-century ago a German named Rudolf Diesel invented a new type of internal-combustion engine. The diesel, brought to its present state of development is very powerful, extremely reliable, and comparatively economical to operate. In fact, unbelievable though it may seem, a modern diesel-electric locomotive can haul one ton, one mile, on *one teaspoonful* of fuel oil!

In the modern diesel locomotive the diesel engine operates an electric generator, through which electric power is supplied to the traction motors mounted on the trucks of the locomotive. This arrangement gives complete flexibility and has the great advantage of providing continuous "torque" instead of a succession of power impulses. That's one reason why diesels can pull heavier trains than steam locomotives can — and also can start trains more smoothly, which saves wear and tear on the couplers.

The Boston and Maine was among the first railroads in America to use diesel power.

DIESEL



3800-3820
Main Line Passenger Service
161 Tons 71 feet long
2000 Horse Power
85 M.P.H. Maximum speed



1555-1571
Local Passenger, Freight and
Pusher Service
123 tons 55'11" long
1500 Horse Power
65 M.P.H. Maximum speed



1550-1553
Local Passenger and Freight
113 tons 57'10" long
1500 Horse Power
65 M.P.H. Maximum speed



1530-1534
Local Passenger, Freight and
Pusher Service
123 tons 55'5" long
1500 Horse Power
65 M.P.H. Maximum speed

1535-1545
Local Passenger, Freight
and Pusher Service
125 Tons 56' long
1600 Horse Power
65 M.P.H. Maximum speed

DIESEL



6000
"Minute Man"
Passenger capacity 132
600 Horse Power Diesel-electric
articulated — three units



1162-1176
Yard Switching and Light Local
Freight
99 tons 44'5" long
660 Horse Power
60 M.P.H. Maximum speed



1200-1213
Heavy Road Switching and Local
Freight
124 tons 44'5" long
1000 Horse Power
60 M.P.H. Maximum speed



110-119
Yard Switching and Short Local
Freight
44 tons 35'5" long
380 Horse Power
35 M.P.H. Maximum speed



AN OLD SOLDIER FADES AWAY

4113-4117 — Class R-1D — 4-8-2 and Tender
Total Weight 814,800 lbs.
Heavy Passenger and Freight service

We include this section "for the record" as well as for the interest of railroad enthusiasts. When the era of steam finally passes into memory, some of the romance of railroading will go with it.

Probably no machine has ever so well symbolized "power on wheels" as the steam locomotive. Ever since the early days of railroads, people have thrilled at the sight and sound of a big engine roaring down the track with its string of cars behind it.

The problem of locomotive designers has always been how to pack more and more power into the same amount of bulk — for the overall length of a locomotive is strictly limited by turning radius, and its height and width by tunnel and bridge clearances.

Most types of steam locomotives are identified by their wheel arrangement — the number of front, or "pilot" wheels; the number of "drivers"; and the number of rear wheels or "trailers". The goal of the designer, of course, is to have as much of the locomotive's weight as possible bear on the driving wheels.

WHISTLE LANGUAGE

Whistles are just as essential in the operation of a railroad as are block signals, and other safety devices.

Each different series of toots carries its own special message of warning or instruction.

Here is the "whistle language" used by the B and M:
"—" means a long toot; "o" means a short one.

— — o o
Approaching crossing (last short toot sounds just as crossing is reached).

— — — o o o
When train stops on main line, engineer instructs flagman to protect rear end of train.

— — — — —
Train ready to proceed. Engineer calls in flagman from West or South.

— — — — —
Train ready to proceed. Engineer calls in flagman from East or North.

o o o
When train is stopped, engineer is going to back.
When train is running, engineer acknowledges signal from conductor to stop at next station.

— — — o o o
When train is running, alarm for fire or livestock on right-of-way. Signal is given two or three times as train passes fire or livestock, and again on reaching next station or section crew.

— — —
Approaching junction, or mail crane where train picks up mail bag "on the fly", or for warning.

o o o o o o o (succession)
Alarm for persons or livestock on the track.

PASSENGER



The 'KENNEBEC', eastbound at Scarborough, Maine

Comfort, convenience, reliability and economy are the four big things a railroad offers to travelers. And even today, no other form of transportation can offer all four in the same degree that the railroads do.

It's a far cry from the old to the new in passenger cars. The first coaches, luxurious though they were in their time, had no such comforts, convenience and privacy as today's modern cars. The new, streamlined day coaches, with their adjustable seats, sound-proof construction and year-round air-conditioning, offer luxury and relaxation unheard of even a few years ago and we consider our new coaches the finest in the country.

Dining cars, too, have been vastly improved — not only in design but in quality of service. Truly, the railroads offer more for your travel dollar than ever in history.

At the present time the B and M owns about 980 passenger equipment cars.



Interior of a Boston and Maine Restaurant Lounge Car



70-71
Stainless Steel Restaurant-Lounge Car
Length: 85 feet, 7 inches
Seating Capacity: 24 in diner, 18 in lounge



4800-4807
Stainless Steel Coach
Length: 85 feet, 7 inches
Seating Capacity: 56 in main car, 10 in smoker



3800-3801
Stainless Steel Baggage Combine
Length: 85 feet, 7 inches
Seating Capacity: 36 in main car, 8 in smoker

PASSENGER



4585-4614
Air-Conditioned Coach
Length: 84 feet, 7¼ inches
Seating Capacity: 84



3600-3696
Passenger and Baggage Combine
Length: 82 feet
Seating Capacity: 44 to 56



800-1500
Commuter Coach
Length: 78 feet, 9 inches
Seating Capacity: 72 to 98



Milk Car
Length: 44 feet, 3 inches
Capacity: 8,000 gallons
This milk car is not a passenger carrying car but is listed as passenger equipment.

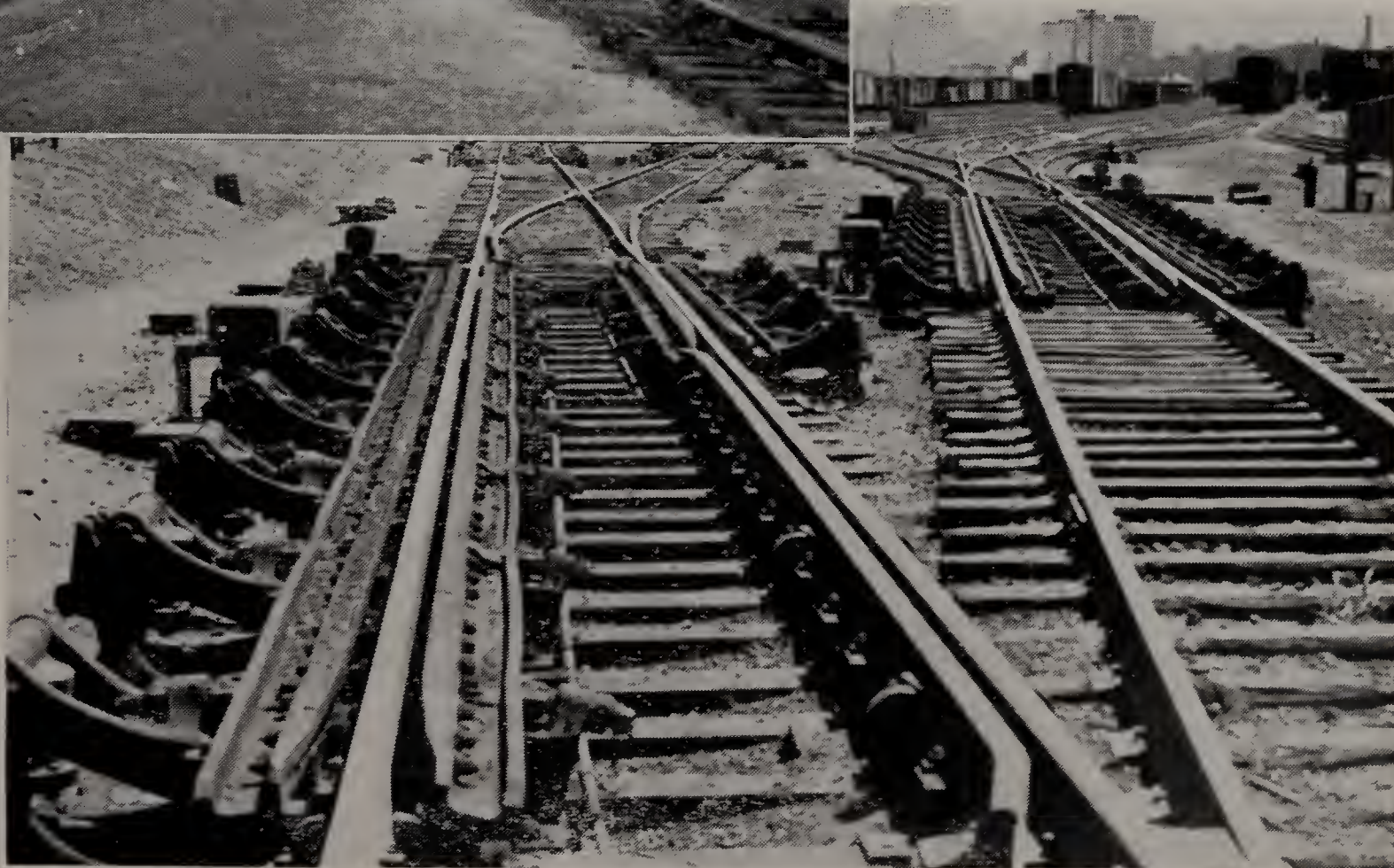
CLASSIFICATION YARD



ABOVE: Boston and Maine Classification Yards at Somerville. Here incoming freight trains are sorted into local units and outgoing freight trains are made up.



LEFT: The 'hump', a man-made hill of rails, down which the cars roll and are switch-controlled to any point in the yard.



A Retarder — power operated braking mechanism controlled by operator in retarder tower capable of slowing or stopping freight cars.

FREIGHT



Westbound Four Unit Freight Rounding Zoar Curve, Zoar, Mass.

Freight, though less spectacular than the streamlined stainless steel, high speed passenger "limited", is the vital service to industry and commerce. The B and M handles in a year about 750,000 *loaded* freight cars — not counting empties.

To handle the more than 200 types or classes of freight, the railroads have developed many different kinds of freight cars. The list goes from the familiar box car and gondola to the newest covered hopper car.

There are upwards of ten or a dozen different types of freight cars in general use today. (That's not counting the special designs for unusual shipments like the car that carried the great 200-inch reflector from the East Coast to California a few years ago.)

Every freight car bears its own identifying number, and through a complicated but efficient system of co-operative "book-keeping", every major railroad in the United States knows always just where all its cars are and where they're heading for. In the case of the B and M, this means keeping track of a total of 5529 cars, most of them scattered all over the country!

FREIGHT



Gondola Car
Length: 41 feet
Capacity: 1980 cubic feet, 100,000 pounds



Self-Clearing Hopper Car
Length: 41 feet
Capacity: 2748 cubic feet, 140,000 pounds



Box Car
Length: 41 feet, 10 inches
Capacity: 3881 cubic feet, 100,000 pounds



Covered Hopper Car
Length: 32 feet, 4 inches
Capacity: 1790 cubic feet, 140,000 pounds

FREIGHT

Ventilator and Refrigerator Car
 Length: 42 feet, 2 inches
 Capacity: 1987 cubic feet, 90,000 pounds
 Ice Capacity: 11,000 lbs. crushed ice, 10,600 lbs. coarse ice, 10,000 lbs. chunk ice



Flat Car
 Length: 53 feet
 Capacity: 140,000 pounds

Depressed Center Flat Car. Length 37 feet 6 inches. Capacity 180,000 pounds.



Tank Car
 Length: 36 feet, 3 inches
 Capacity: 12,000 gallons

FREIGHT

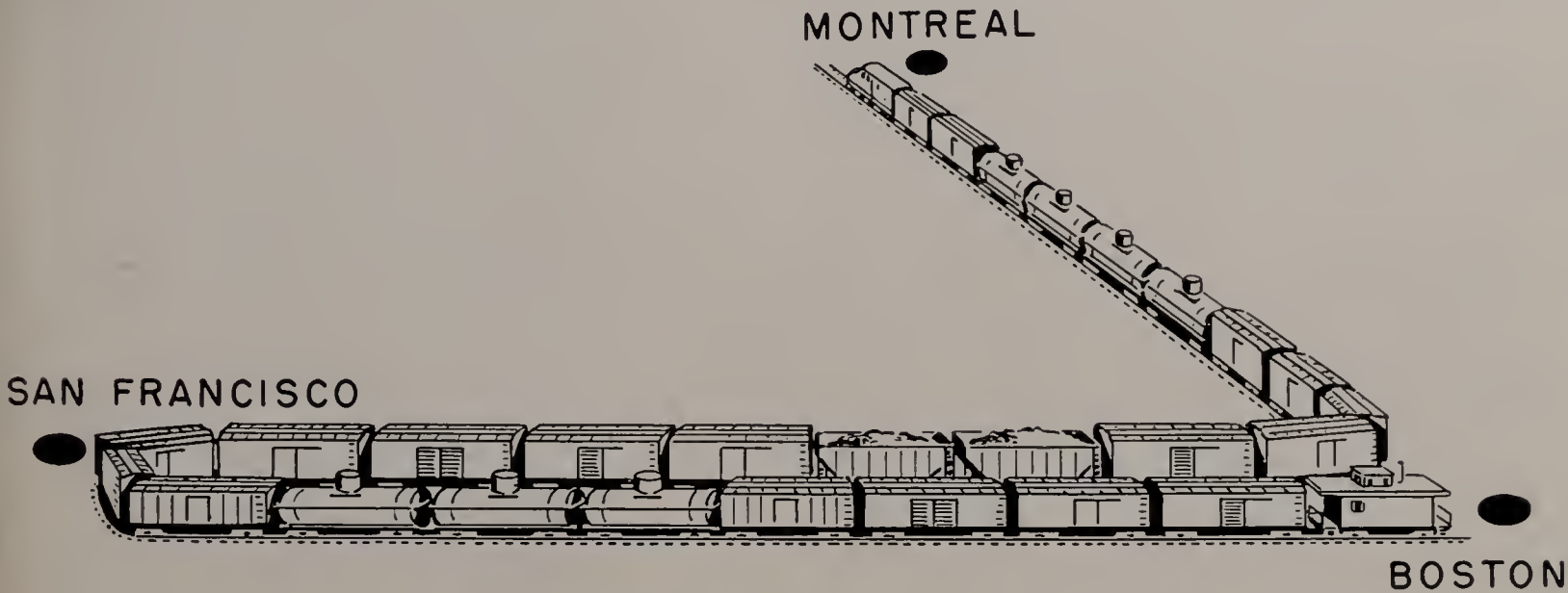


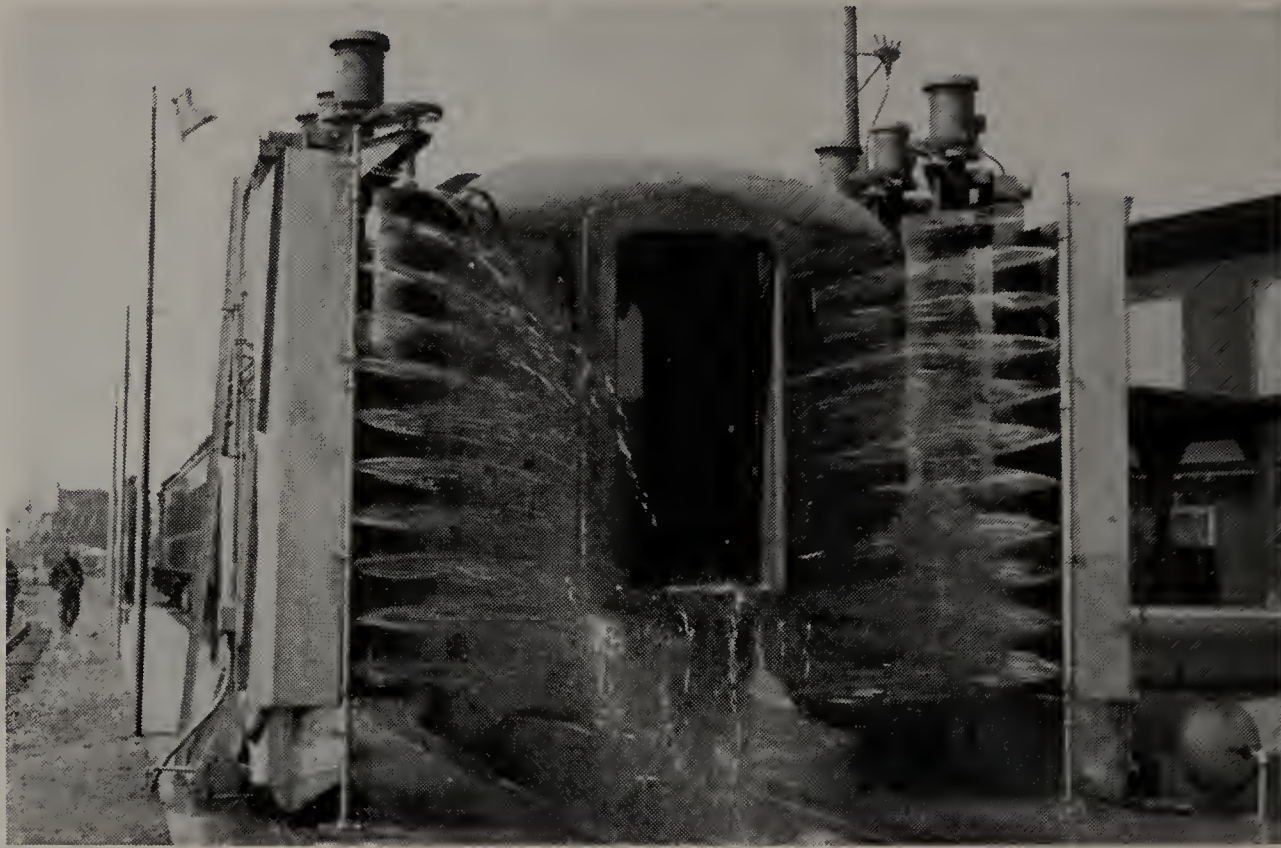
Snow Plow
Length: 46 feet, 3 inches
(This is one of several types in use on the B and M)



Caboose
Length: 29 feet

IF ALL THE LOADED FREIGHT CARS THE B AND M HANDLES IN A YEAR WERE MADE UP INTO A SINGLE TRAIN, IT WOULD REACH FROM BOSTON TO SAN FRANCISCO, BACK TO BOSTON AGAIN, AND THEN NORTHWEST FROM BOSTON ACROSS THE CANADIAN BORDER, WITH THE ENGINE IN MONTREAL.





Car Washers, North Station Yards

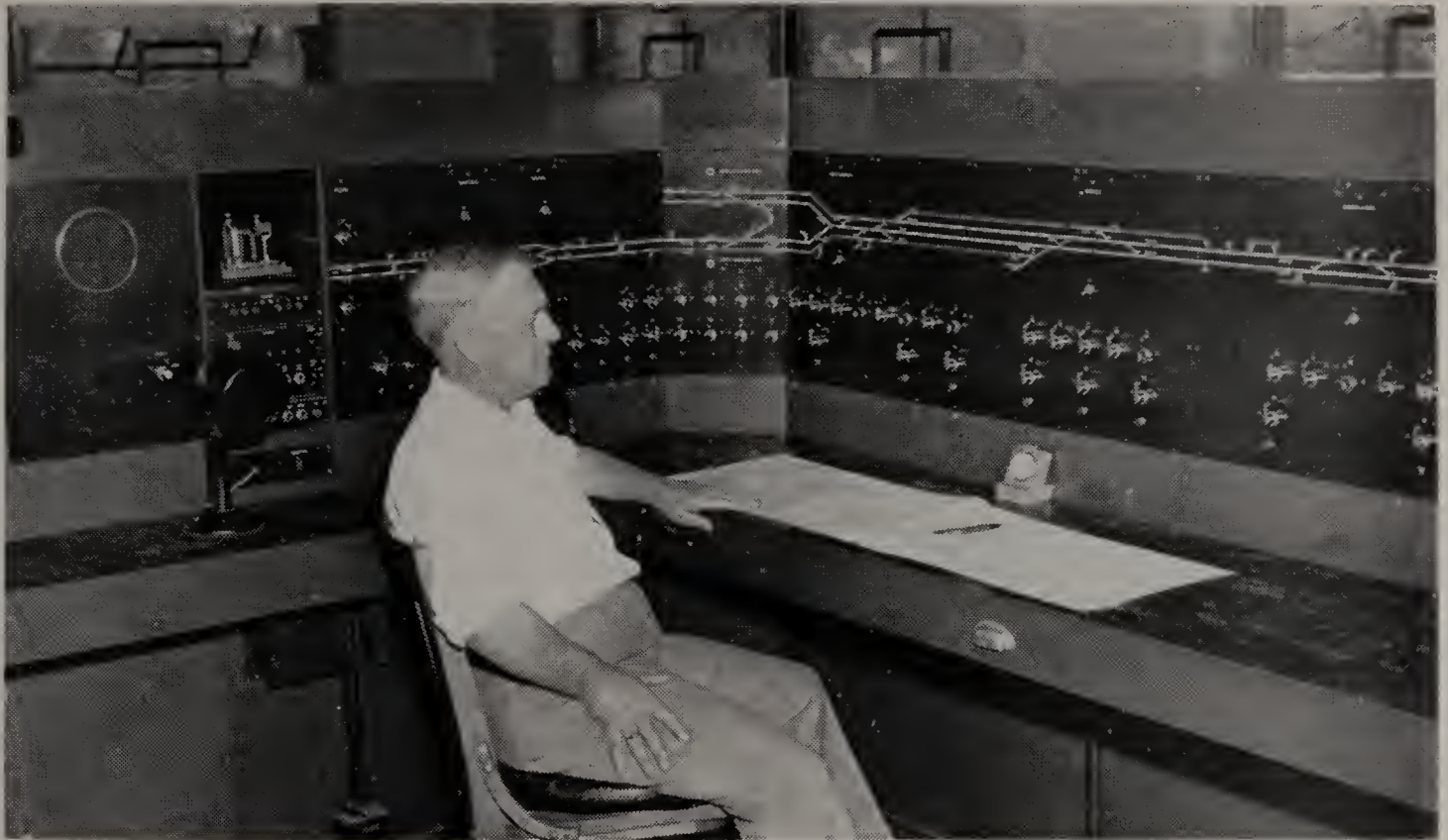
In the foregoing pages we've described some of the rolling stock we use on the B and M. But, of course, it takes a lot more than locomotives and cars to operate a railroad.

The job requires signals, switches, crossing gates, car washers, crossties, terminal equipment, repair shops, bridges, stations, freight houses, even silverware and linen, drinking cups and many more — a virtually endless list of materials and equipment.

Above all, it takes people to run a railroad — 13,000 people in the case of the B and M. It takes conscientious, reliable, highly-trained people to run the trains and interlocking towers, to keep roadbeds in top shape, to handle freight and overhaul locomotives.

In the last analysis it's the combination of equipment and highly skilled people that carry the freight and the mail and bring your train in on time.

Each year thousands of young people are starting careers in the many interesting departments of railroading. The railroad business offers opportunities for a wide range of interests and capabilities. For railroad people there is a deep sense of satisfaction in the realization of their great contribution to the welfare and prosperity of community and country.



Centralized Traffic Control Tower, Lowell, Mass.

The man shown above in the Centralized Traffic Control Tower, Lowell, Mass. controls the movement of all trains over the many miles of track outlined on the board before which he sits. This is done through the use of miniature levers which operate signals and switches.

THREE LIGHT INTERLOCKING SIGNAL

Below is an outline of various signal color combinations and their meaning. G — Green, R — Red, Y — Yellow.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
G	Y	Y	Y	R	R	R	R	R	R
R	G	Y	R	R	R	G	Y	R	R
R	R	R	R	Y	R	R	R	G	Y (flashing)

1. Proceed.
2. Approach next signal at medium speed, 30 M.P.H.
3. Approach next signal at slow speed, 15 M.P.H.
4. Prepare to stop at next signal.
5. Proceed at restricted speed. (Used in switching moves)
6. Stop.
7. Proceed, medium speed within interlocking limits.
8. Proceed at medium speed, prepare to stop at next signal.
9. Proceed, slow speed within interlocking limits.
10. Proceed, prepare to stop at next signal, slow speed within interlocking limits.



GENERAL



One of the many Automatic Gates with red flasher signals in operation on B and M



60 — Speed Post



B13 — Mile Post (Boston 13 miles)



W — Whistle Post



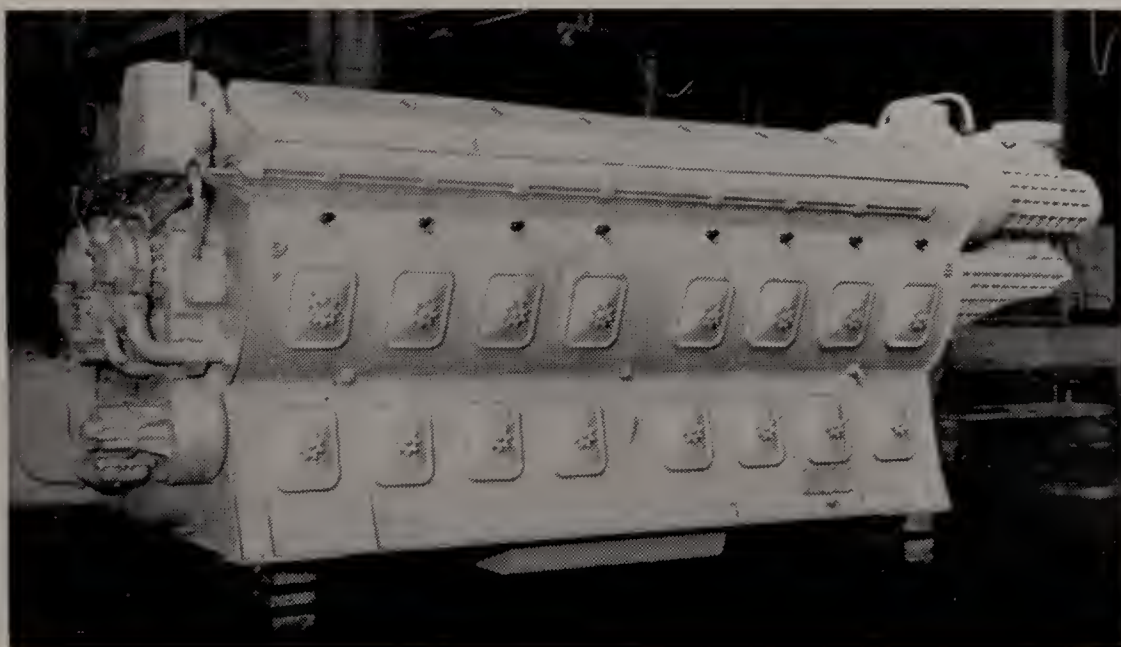
$\frac{12}{97}$ — Bridge and Culvert Marker



Adzing Machine Representative
of Latest Type Track Laying
Equipment In Use On B and M's
Main Line



Freight Handling at Freight
House



1500 Horse Power Passenger
Diesel Engine

WHAT RAILROADS MEAN TO YOU



America's railroads are the backbone of our country's transportation system. They link together communities, states, and regions with thousands of miles of track. The railroads carry more freight more miles than all other forms of transportation together, and carry it safely, quickly and economically from its point of origin to its destination.

The railroads operate without subsidy. They pay their own way. They pay taxes, too — huge taxes that help build schools and hospitals, help pay for public improvements — that benefit communities, states and the nation alike.

The railroads are privately owned and privately operated. They are an outstanding example of private enterprise, operating in a free democracy, to perform a vital public service.

FACTS ABOUT THE BOSTON AND MAINE

"**R**ailroading on the Boston and Maine" has its origins in the history of 178 separate corporations, the oldest of which was granted a charter by King George III in 1772.

The Boston and Lowell, one of three of the chartered corporations to actually build lines, was 25 miles long and opened for business in 1835.

Today, the Boston and Maine Railroad serves the states of Massachusetts, New York, Vermont, New Hampshire and Maine. It operates 1702 miles of road of which 535 are double track, with total miles of track operated 3232. The road provides passenger and freight rail service for industrialized areas, rural areas and five Atlantic ports: Boston, Salem and Beverly, Mass.; Portsmouth, N. H.; and Portland, Me. Its main lines fan out from Boston in three general directions, easterly to Portland, Me.; northerly to White River Junction and Wells River, Vt.; and westerly to Rotterdam, N. Y.; with intermediate connecting cross lines between Worcester, Mass., and Portland, Me.; Springfield, Mass., and Wells River, Vt.; and many branch lines. The principal gateways and interchange points are: — Rotterdam Jct., N. Y., with the New York Central; Mechanicville, N. Y., with the Delaware & Hudson; Springfield and Worcester, Mass., with the New York, New Haven and Hartford; White River Jct., Vt., with the Central Vermont (Canadian National); Wells River, Vt., with the Canadian Pacific; Bellows Falls, Vt., with the Rutland; and Portland, Me., with the Maine Central and the Canadian National.

RAILROAD QUIZ

1. What was the first incorporated railroad company to build and operate a railroad in the United States?

The Granite Railway Company, incorporated in Massachusetts on March 4, 1826, was the first railway corporation actually to build and operate a railroad in the United States.

2. Who invented the steam locomotive?

The steam locomotive is the product of many inventors. Its fore-runners were the stationary steam engine invented by Thomas Newcomen in 1705 and the greatly improved engine invented by James Watt in 1769. Steam engines employed to propel vehicles were built by Cugnot, a Frenchman, in 1769; William Murdock, an Englishman, in 1784; Oliver Evans, an American, and Richard Trevithick, an Englishman, in 1804; and by George Stephenson, an Englishman, in 1814.

3. In what year did railway construction in the United States reach its peak?

In 1886, when a total of 12,879 miles of railway was built — enough to span the continent four times between New York and San Francisco. This record was never equalled before or has it been equalled since. The nearest approach to it was made in 1882 when 11,591 miles of new line were opened.

4. What was the ceremony known as 'The Driving of the Golden Spike'?

This historic event occurred at Promontory, Utah, on May 10, 1869, when the last rails of the Union Pacific and the Central Pacific were laid and the tracks were joined to form the first railway line to the Pacific. A spike of California gold and a spike of Nevada silver were driven by distinguished officials. The original Golden Spike now reposes in a bank vault in San Francisco.

5. When were United States mails first carried by rail?

The first known instances of United States mails being transported by rail occurred on the South Carolina Railroad out of Charleston, South Carolina, in November, 1831, and on the Baltimore & Ohio Railroad between Baltimore and Frederick, Maryland, about January 1, 1832. Shortly after the opening of the Baltimore & Ohio Railroad between Baltimore and Washington in 1835, a car was fitted with a compartment for carrying United States mails between the two cities.

6. How much of the world's railway mileage is in the United States?

With less than six percent of the world's land area and about six

percent of the world's population, the United States has about 29 percent of the world's railway mileage.

7. What is the standard length of rail?

The present standard length of rail is 39 feet. Some railroads however, use 45, 60 and 78-foot rails in highway-railroad grade crossings, station platforms and other special locations. Until 1925, the standard length was 33 feet, and prior to that it was 30 feet. Welded rails up to one mile long are now being used on some railroads.

8. How much do rails weigh?

Rails ranging in weight from 50 to 155 pounds per yard are in use on the Class I railroads of the United States. On trunk lines, rail weights range from 85 pounds upward.

9. What were some famous transcontinental train runs?

The first railway train ever operated from the Atlantic to the Pacific was the Trans-Continental Excursion sponsored by the Boston Board of Trade in May, 1870, one year after the Union Pacific and Central Pacific railroads were opened. The trip from Boston to San Francisco consumed eight days and was made in Pullman "hotel cars." A daily newspaper, the "Trans-Continental", was published en route. In June, 1876, the "Jarrett and Palmer Special" raced across the country from Jersey City to San Francisco (Oakland Wharf), 3,312 miles, in 84 hours 20 minutes, or about 3½ days. Normal transcontinental rail time in that period was about seven days. Three cars and 19 locomotives were used during the trip.

10. What is a ton-mile?

A ton-mile is the transportation of one ton of freight one mile.

11. What is a bill of lading?

A bill of lading is a receipt given by a freight agent for property received to be transported. It is a contract between the shipper and the railroad, covering the shipment from point of origin to point of destination.

12. What is an L.C.L. shipment?

Any shipment of freight which is too small to move on a carload rate is called an L.C.L. shipment, the initials meaning literally "less carload". Such shipments, usually consisting of crates, cartons, boxes, barrels, etc., are handled in package cars with other L.C.L. shipments.



Moving them at Night.



The Boston and Maine is proud to be one of the vast network of American railroads which play such a vital part in the prosperity, strength and growth of our country. There is great satisfaction for private enterprise such as ours in the realization of a job devoted to the public service.



RAILROAD

"MINUTE MAN SERVICE"



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